

Notice of Allowability

Application No.

10/808,194

Examiner

David P. Rashid

Applicant(s)

CHELLAPILLA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the interview summary conducted on 9/21/2007.
2. ☒ The allowed claim(s) is/are 1 - 10, 12 - 25, 27 - 37, and 39 - 40.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>20070924</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT AND NOTICE OF ALLOWABILITY

1. The following examiner's amendment is in response to the telephone interviews on dates 9/5/2007 and 9/21/2007.

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with David Brush (Reg. No. 34,557) on 9/21/2007.

The application has been amended as follows (next page):

IN THE CLAIMS

1.(Currently Amended) A computer-implemented method for populating an electronic form from an electronic image, the method comprising:

- (a) identifying a size, orientation and position of a first object having any arbitrary orientation within the electronic image;
- (b) identifying information elements from pixels within the electronic image that correspond to the first object, including identifying text blocks within the first object using optical character recognition;
- (c) displaying simultaneously to a user fields of the electronic form in a form data area and the identified text blocks in an object data area that is outside of the form data area, which corresponds to the first object, through a graphical user interface, wherein the text blocks are selectable by the user within the object data area through the graphical user interface for insertion into respective fields of the electronic form in the form data area;
- (d) parsing the information elements into tagged groups of different information types;
and
- (e) automatically populating the fields of the electronic form with the tagged groups to produce a populated form and allowing the user to edit the populated fields through the graphical user interface; and
- (f) providing a visual status indicator adjacent each field of the form data area alerting the user that the field is unfilled and unverified, filled but unverified, and filled and verified, the status being based on the automatic populating and user editing.

2.(Original) The method of claim 1 wherein (a) comprises identifying a size, orientation and position of the first object among a plurality of objects within the electronic image.

3.(Original) The method of claim 1 wherein (a) comprises:

- classifying each pixel within the image to produce pixel classification data;
- defining an image function to process the pixel classification data;
- dividing the image into sub-images based on disparities in the image function; and

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processing the sub-images to determine a size, an orientation and a position for each of the objects, including the first object.

4.(Original) The method of claim 3 and further comprising repeating the classifying pixels, defining an image function, and dividing of the image until the image contains a single object or the image can no longer be divided.

5.(Original) The method of claim 3 wherein classifying comprises classifying each pixel as one of a data pixel or a background pixel.

6.(Original) The method of claim 5 and further comprising:
defining the image function as a sum of data pixels in a certain direction;
calculating the image function in a first direction to generate a first data set;
calculating the image function in a second direction to generate a second data set; and
searching for disparities in the image function in the first direction and the image function in the second direction.

7.(Previously Presented) The method of claim 1 wherein:
(b) comprises identifying two-dimensional locations of the text blocks within the first object.

8.(Previously Presented) The method of claim 7 wherein:
(c) comprises displaying to the user the identified information elements in the object data area within an image of the first object through the graphical user interface; and
(d) comprises highlighting the tagged groups of different information types within the image of the first object in the object data area with visual indicators that indicate the different information types.

9.(Original) The method of claim 1 wherein:
(d) comprises receiving the information elements as untagged media from an untagged

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media store, and parsing the untagged media to identify information types of the information elements;

(c) comprises automatically populating at least one of the fields with at least one of the information elements based on the information type of that element; and

(c) comprises displaying the information elements through an object data graphical user interface and displaying the populated fields and any unpopulated fields through a form graphical user interface.

10.(Original) The method of claim 9 wherein (c) further comprises employing visual indicator in the object data graphical user interface to indicate that an information element is compatible with a particular field in the form.

11. (Canceled).

12.(Currently Amended) The method of claim ~~11~~ 1 wherein (c) further comprises prompting the user to perform at least one of verifying and/or correcting the at least one information element in the at least one populated field based on the indicated status level status indicator associated with that field.

13.(Currently Amended) The method of claim 12 wherein (d) comprises updating other fields of the populated form based on at least one of the user verification and/or correction of the at least one information element.

14.(Currently Amended) The method of claim 1 and further comprising:

(f)(g) writing side information gleaned from edits made to any of the populated fields to a side information store; and

(g)(h) re-parsing the information elements into tagged groups of different information types in (d) and re-populating at least one other field in (e) based on the side information.

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15.(Currently Amended) The method of claim 1 wherein the electronic image comprises a plurality of objects and the method further comprises:

(g) performing (a) through (e) for each object, such that, for each object, fields of a corresponding electronic form are at least partially populated with information elements obtained from pixels within that object.

16.(Original) The method of claim 15 wherein the plurality of objects comprises objects of different types.

17.(Currently Amended) A computer-readable medium comprising computer storage media and computer-executable instructions, at least some of which are stored on the computer storage media and that, when executed by a computer, perform a method comprising:

- (a) identifying a size, orientation and position of a first object having any arbitrary orientation within an electronic image;
- (b) identifying information elements from pixels within the electronic image that correspond to the first object, including identifying text blocks within the first object using optical character recognition;
- (c) displaying simultaneously to a user fields of the electronic form in a form data area and the identified text blocks in an object data area that is outside of the form data area, which corresponds to the first object, through a graphical user interface, wherein the text blocks are selectable by the user within the object data area through the graphical user interface for insertion into respective fields of the electronic form in the form data area; and
- (d) parsing the information elements into tagged groups of different information types;
- (e) automatically populating the fields of the electronic form with the tagged groups to produce a populated electronic form and allowing the user to edit the populated fields through the graphical user interface; and
- (f) providing a visual status indicator adjacent each field of the form data area alerting the user that the field is unfilled and unverified, filled but unverified, and filled and verified, the status being based on the automatic populating and user editing.

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18.(Currently Amended) The computer-readable medium of claim 17 wherein the electronic image comprises a plurality of objects, including the first object, and the method further comprises:

(f)(g) performing (a) through (e) for each object, such that, for each object, fields of a corresponding electronic form are at least partially populated with information elements obtained from pixels within that object.

19.(Original) The computer-readable medium of claim 18 wherein the plurality of objects comprises objects of different types.

20.(Original) The computer readable medium of claim 17 wherein (a) comprises:

classifying each pixel within the image to produce pixel classification data;

defining an image function to process the pixel classification data;

dividing the image into sub-images based on disparities in the image function; and

processing the sub-images to determine a size, an orientation and a position for each of the objects, including the first object.

21.(Original) The computer-readable medium of claim 20 wherein classifying comprises classifying each pixel as one of a data pixel or a background pixel.

22.(Original) The computer-readable medium of claim 21 and further comprising:

defining the image function as a sum of data pixels in a certain direction;

calculating the image function in a first direction to generate a first data set;

calculating the image function in a second direction to generate a second data set; and

searching for disparities in the image function in the first direction and the image function in the second direction.

23.(Previously Presented) The computer-readable medium of claim 17 wherein:

(b) comprises identifying two-dimensional locations of the text blocks within the first

object; and

- (d) comprises highlighting the tagged groups of different information types within the image of the first object in the object data area with visual indicators that indicate the different information types.

24.(Original) The computer-readable medium of claim 17 wherein:

- (d) comprises receiving the information elements as untagged media from an untagged media store, and parsing the untagged media to identify information types of the information elements;
- (e) comprises automatically populating at least one of the fields with at least one of the information elements based on the information type of that element; and
- (c) comprises displaying the information elements through an object data graphical user interface and displaying the populated fields and any unpopulated fields through a form graphical user interface.

25.(Original) The computer-readable medium of claim 24 wherein (c) further comprises employing visual indicator in the object data graphical user interface to indicate that an information element is compatible with a particular field in the form.

26. (Canceled).

27.(Currently Amended) The computer-readable medium of claim 26 17 wherein (c) further comprises prompting the user to perform at least one of verifying and/or correcting the at least one information element in the at least one populated field based on the indicated status level status indicator associated with that field.

28.(Currently Amended) The computer-readable medium of claim 27 wherein (d) comprises updating other fields of the populated form based on at least one of the user verification and/or correction of the at least one information element.

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29.(Currently Amended) The computer-readable medium of claim 17 and further comprising:

(f)(g) writing side information gleaned from edits made by the user in step (c) to a side information store; and

(g)(h) re-parsing the parsing the information elements into tagged groups of different information types in (d) and re-populating at least one other field in (e) based on the side information.

30.(Currently Amended) A system for at least partially populating electronic forms, the system comprising:

a display device;

an object detection and extraction module, which processes pixels in the electronic image to identify a size, orientation and position of an object having any arbitrary orientation within the electronic image;

an optical character recognition module, which identifies information elements, including text blocks, from pixels within the electronic image that correspond to the first object;

a graphical user interface, which simultaneously displays to a user, on the display device, fields of the electronic form in a form data area and the the identified text blocks in an object data area that is outside of the form data area and corresponds to the first object, and wherein the text blocks are selectable by the user within the object data area through the graphical user interface for insertion into respective fields of the electronic form in the form data area; and

a parsing module, which parses the information elements into tagged groups of different information types and at least partially populates the fields with the tagged groups automatically to produce a populated electronic form, wherein the graphical user interface provides a visual status indicator adjacent each field of the form data area alerting the user that the field is unfilled and unverified, filled but unverified, and filled and verified, the status being based on the automatic populating and user editing.

31.(Original) The system of claim 30 wherein the graphical user interface allows the user to edit the populated fields and any unpopulated fields.

32.(Original) The system of claim 30 wherein the object detection and extraction module comprises:

- a data pixel detection module that classifies each pixel of the image and defines an image function;
- a segmentation module that is capable of dividing the image into smaller sub-images based on disparities in the image function; and
- a single object extraction module that processes the sub-images to detect a number, a size, an orientation and a position of objects within the image.

33.(Original) The system of claim 32 wherein the data pixel detection module classifies each pixel as one of a data pixel or a background pixel.

34.(Previously Presented) The system of claim 33 wherein the data pixel detection module defines the image function as a sum of data pixels in a certain direction, calculates the image function in a first direction to generate a first data set, calculates the image function in a second direction to generate a second data set, and searches for disparities in the image function in the first direction and the image function in the second direction.

35.(Previously Presented) The system of claim 30 wherein:

- the optical character recognition module comprises means for identifying two-dimensional locations of the text blocks within the first object; and
- the graphical user interface comprises means for displaying the identified text blocks within an image of the first object to the user through the graphical user interface and highlighting the tagged groups of different information types within the image of the first object with visual indicators that indicate the different information types.

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36.(Previously Presented) The system of claim 30 wherein:

the parsing module comprises means for receiving the information elements as untagged media from an untagged media store, parsing the untagged media to identify information types of the information elements, and automatically populating at least one of the fields with at least one of the information elements based on the information type of that element; and

the graphical user interface comprises means for displaying the information elements through an object data graphical user interface and displaying the populated fields and any unpopulated fields through a form graphical user interface.

37.(Previously Presented) The system of claim 36 wherein the object data graphical user interface comprises a visual indicator to indicate that an information element is compatible with a particular field in the form.

38.(Canceled)

39.(Currently Amended) The system of claim ~~38~~ 30 wherein the graphical user interface comprises means for prompting the user to perform at least one of verifying and/or correcting at least one information element in at least one populated field based on the status level indicator associated with that field.

40.(Previously Presented) The system of claim 31 wherein the parsing module comprises means for updating other fields of the populated form according to edits made by the user to the populated fields and the unpopulated fields.

41.(Cancelled)

42. (Canceled)

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3. **Claims 1 – 10, 12 – 25, 27 – 37, and 39 – 40** allowed. These claims will be renumbered as **1 – 37**.

Conclusion


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David P. Rashid whose telephone number is (571) 270-1578. The examiner can normally be reached Monday - Friday 8:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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